University of St Andrews

COMPUTING LABORATORY

COMPUTER USERS COMMITTEE
GHOST 80
TEN YEARS AGO
MICROCOMPUTER USER AREA

SUPPLEMENT ON VAX/VMS VERSION 4.2

NEWSLETTER

January 1986

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Computer Users Committee

The Committee met on 6th November 1985. There were no matters arising from the minutes of the last meeting.

Change-over to Version 4 of VAX/VMS

An outline was given of the reasons for the change: new releases of compilers and software from other sources would run only under Version 4, and DEC would no longer support Version 3. Some expected reduction in performance would be minimised by careful choice of new features and the recent memory upgrade.

With only a few exceptions, users would be able to use VMS in the same way as at present. There would be new command language facilities, new versions of compilers and the debugger, and new editors.

Machine SAVB would be unavailable for most of the Christmas vacation and SAVA for a few days before the start of the new term - SAVB users could arrange transfer of their work to SAVA during the change-over period. The lengthy period for the change was required in order to rationalise disk space and some user facilities.

Revised Conditions for the Use of the Computing Service

These had been revised in the light of the new Data Protection Act and the new Copyright act, and all users would be covered, not just those who used the VAX systems. The new conditions (in draft form) were to be ratified by the Computer Committee, and then existing users would be asked to sign them. The two existing forms would eventualy be combined.

Questions on the storage of student marks on the computer and the registration of personal data systems were referred to the Data Protection Coordinator, Mr P M Dewar, who would shortly issue staff guidelines.

Status report on networking

Negotiations with British Telecom had been completed and the equipment ordered. Cabling had been installed, and following testing as independent rings, a trial service would, it was expected, be operational by about February.

Problems had occurred with the Camtec gateway connecting the VAXs to the North Haugh Ring and JANET. A new version of the software was about to be tested, and it had been discovered that the hardware had been incorrectly configured - however, only so much could be done to test the gateway without actually putting it into service.

Standard protocols had not yet been produced for Ethernet, so such facilities could not be made available for some years. Connection to international networks would be via IPSS, in turn accessible via JANET, but at a charge to the user's department. The EARN network was being introduced for access to many European sites.

Use of the Spinwriter queue

It had been proposed at a previous meeting that single-pass ribbons be used, with free use of the queue up to a specified amount of output, to obviate the necessity for large numbers of "personal" ribbons. However, it had been found that it was not possible to monitor usage

accurately, because VMS counted pages by line-feed characters, whereas SIMTEX produced half-line-feeds. The Spinwriter would anyway need to be replaced soon, perhaps by a laser printer. It was decided to continue with the present arrangements.

Status of the editors

DEC were no longer supporting the SOS editor, which ran in compatibility mode and therefore was very inefficient: in addition, it required extra software which took up valuable space, and which DEC would probably charge for in the future. EDT could be run as one image shared by all logged-on users - this could not be done with SOS. There needed to be a balance between efficient usage of the VAX in the interests of all users and the individual ease of use of SOS users. However, it was recognised that users with "dumb" terminals needed editing facilities of the type provided by Alter mode in SOS - a document to assist users in changing from SOS to EDT would be provided.

Operation of the magnetic tape queue on Saturdays

A request was made on behalf of Astronomer researchers for this facility. However, finance had been obtained only for limited operator cover on Saturday opening during term-time, mainly for improved student access, and so it was not possible to provide the magnetic tape queue cover with only one operator.

Other business

The withdrawal of the ARCHIVE facility was explained: it had been found to have deficiencies, and it was felt better to withdraw it than to find later that users could not retrieve archived files. A group drawn from all university VAX/VMS installations was looking into the question of archiving; in the meantime, users could be allocated more space or a personal magnetic tape.

GHOST 80

The GHOST 80 user manual has been distributed to the terminal sites, and is also available to users from the secretaries, price £2.00.

Ten Years Ago

In the Newsletter for January 1976, mention was made of the change from version 1 to version 2 of GLIM (General Linear Interactive Modelling program). In connection with this, it had been found necessary to devise a method of executing under RAX (the terminal system then in use with the IBM 360/44) any program of greater than 82K!
(Remember that the total memory available on the 360/44 had by then been doubled, to ¼ Mbyte ....)

Microcomputer User Area

As reported in the previous newletter, the Microcomputer User Area has now moved to the small seminar room in the John Honey Building. This note summarises the facilities now available in the room. For further information, please contact either Bruce Campbell (ext 8114) or Phil Robertson (ext 8112) in the Computing Laboratory.

IBM PC/XT

This equipment comprises a 512 kb memory IBM PC/XT system fitted with a Maths coprocessor and a Proprinter. A range of software is available for evaluation (see November 1985 newsletter). In addition, we now have demonstration versions of the Vuwriter and Wordcraft word processing software, the Delta4 database program and the Domino teaching package.

BBC microcomputers

Two BBC microcomputers are available. One system is fitted with the Wordwise Plus word processor and has access to a VAX line to enable the transfer of files to and from the VAX. The second system is equipped with a double disc drive to allow disc-to-disc copying and also with diagnostic software to aid debugging. Two programs are available; Toolstar is a program which allows investigation of the system i.e. the memory and discs, directly while the second program, Sleuth, is for the debugging of BASIC programs. It runs in parallel with the BASIC program and allows the user to check the state of memory and variables at various points in the program.

Sinclair QL

A Sinclair QL microcomputer is fitted with an RS232 serial interface and has access to a VAX line. The QCONNECT software allows VT100 emulation and also file transfer between the VAX and the microcomputer. It is hoped shortly to equip the QL with a colour monitor and a disc drive. The standard QL software, Quill, Abacus, Archive and Easel, is also available.

CP/M systems

The two 'elderly' CP/M systems are still available. The Cromemco System 3 running CDOS is the only system with 8" disc drives. It can handle a variety of densities. The Superbrain runs the standard CP/M version 2 system. Both micros have serial ports and can be set up to communicate with the VAX.

The Microcomputer User Area is normally kept locked. Users can arrange entry by either contacting Alan Young (ext 8205) or by borrowing a key from the operators in the Computing Laboratory. Please note that both the software and accompanying literature are for reference; therefore users are asked not to 'borrow' manuals and are reminded that unauthorised copying of software is now a criminal rather than a civil offence.

VAX/VMS Version 4.2

As many users will now be aware, over the Christmas vacation the VAX/VMS operating system on SAVA and SAVB was upgraded from version 3.6 to version 4.2. This article summarises the main changes affecting users. Further information can be found in the HELP files and the DEC manuals which have been distributed to the terminal sites (type HELP DOCUMENT for a list of the manuals currently available). Orders for personal copies of DEC manuals can be placed with Mr Alan Cunningham (ext 8120). If you have any queries, please contact the Advisory Service (by sending MAIL to ADVISOR, telephoning ext 8140 or personal visit to the John Honey Building).

WITHDRAWN FACILITIES

It has regrettably been necessary to withdraw some items of software. Most have been superseded by newer, more efficient alternatives.

o SOS

The Laboratory's proposal to withdraw this old editor, no longer supported by DEC, generated much debate among users. However, at its last meeting in November 1985, the Computer Users Committee agreed to its withdrawal.

The recommended replacement for SOS is EDT, which the Laboratory has been teaching in its courses since 1982. EDT is primarily designed for screen editing from VT52 and VT100 terminals but it can still be used in a "line mode" from any terminal. In response to a request from the Computer Users Committee, a new User Note 16 "Using EDT from a dumb terminal" has been produced. This is available free from the Computing Laboratory secretaries and includes details of how EDT can be used in a similar fashion to the ALTER mode command of SOS.

Some users used SOS in READ mode to examine LOG files of batch jobs while they were still executing; it is now possible to use the TYPE and SEARCH commands to do this.

Another point to look out for is that in EDT the maximum line length that can be handled is 255 characters, as opposed to 512 in SOS; this will cause problems for users who have created extremely long lines in .RNO and .SIM files. The Advisory Service can assist you in splitting up such long lines into smaller lines.

o RNO

Users of RNO are recommended to use DSR instead. By default, DSR documents are given the type MEM, as opposed to the type DOC used by RNO. Most of the RNO commands work with DSR, which has a large number of additional facilities. Users may find that the layout of the documents produced by DSR is slightly different from that produced by RNO. The Advisory Service will be pleased to assist any user requiring help in sorting out these minor problems.

o Desk calculator

This program was invoked by the commands CALC or DC. Suitable alternatives are MINITAB or interactive BASIC.

o BOXJEN

This statistical package was used by the Statistics Department although it was never advertised as being generally available. SPSS-X has a Box-Jenkins procedure which can be used in its place.

o PHONE

This utility has now been withdrawn from SAVA; it had already been withdrawn from SAVB.

o ATTACH

This symbol conflicted with the DCL command ATTACH; you should use ASSIGN/USER_MODE in its place. If you wish, you can insert the following statement in your LOGIN.COM file to give ATTACH its previous meaning:

```
$ ATTACH == ASSIGN/USER_MODE
```

o Run-time library routines

A number of local additions to the Run-Time Library have been removed and placed in the library SALIB. If you wish to use these routines, you must search this library when linking your program. The routines removed are ACTIM, CHRIN, CHROT, DQUOTA, FINDDAY, FUIC and the Cifer terminal routines CIFBEL, CIFBSL, CIFCLR, CIFDOF, CIFDON, CIFREC and CIFRSL.

For example, suppose you have a program TEST.FOR which contains a reference to ACTIM. To compile and link this program you should type the commands

```
$ FORTRAN TEST
$ LINK TEST,SALIB/LIB
```

In addition, DEC have designated some of their routines OBSOLETE, thereby giving notice that they are liable to be withdrawn at some future version of VAX/VMS. All such routines now have new, more efficient or flexible equivalents and anyone using obsolete routines is urged to change to the new ones as soon as possible. The routines affected are those starting FOR$CNV_xxx and also the Terminal Independent Screen Manipulation Procedures and their equivalents, for example LIB$SCREEN_INFO and SCR$SCREEN_INFO. New Run Time Library manuals will be available shortly; in the meantime, affected users can contact the Advisory Service for further information.

o System Services

DEC have marked several of their system service routines as obsolete. These are $BRDCST, $CRELOG, $DELLOG, $GETCHN, $GETDEV, $INPUT, $OUTPUT, $SNDACC, $SNDSMB and $TRNLOG. Users of these routines are recommended to change to the DEC replacement as soon as possible.

o Suicide

This command which killed all the processes belonging to a user has been withdrawn. Users can kill their own processes with the STOP command; alternatively, if in difficulty, they can contact the operators.

NEW FACILITIES

o VAX Text Processing Utility (VAXTPU)

This new product has only recently been introduced by DEC. It incorporates two editing interfaces; the first is EVE, a completely new editor with features such as windowing and a "learn" facility; the other is an emulation of EDT in keypad mode. VAXTPU and its editors is designed for use on VT100 and VT200 terminals. Further information can be obtained by typing HELP EDIT/TPU. The Laboratory will be providing further advice on its usage at a later date when it has had time to make an evaluation.

o Command Line Recall and editing

One of the most annoying things to happen when entering a command at a terminal is to find that you have made a mistake in a lengthy command and then have to type it in again. You are now able to recall earlier commands, correct them and then reissue the corrected command. Information on this can be found by typing HELP LINE_EDITING and HELP RECALL. Pages 5-9 of the VAX/VMS DCL Dictionary manual contain a full description.

o Access Control Lists

This is a new facility for assigning permissions on files to named individuals. Hitherto, if you wished to give a colleague permission to access one of your files, you had to give all members of your group the same permission or worse, if your colleague was not in your group, all other users. Unfortunately, access control lists impose a heavy overhead on file handling by VAX/VMS and it has been decided, in the general interests of all users, not to implement this facility at present.

CHANGES TO EXISTING FACILITIES

o Compilers

New versions of the FORTRAN, PASCAL and BASIC compilers have been introduced. Various extensions and changes have been made to the languages; for example, FORTRAN can now handle record structures. Existing programs should, in general, compile successfully with the new compilers. Users are STRONGLY ADVISED to re-compile and re-link their programs as soon as conveniently possible.

o MAIL

Messages in a each user's MAIL.MAI file are now divided up into named "folders". Incoming mail messages are initially placed in the folder NEWMAIL. After they are read, they are automatically transferred to the folder MAIL. The DELETE command deletes a message by placing it in the folder called WASTEBASKET, which is "emptied" when MAIL is left by the EXIT command.

Users can create other folders using the FILE command. The EXTRACT command can be used to store a message in a sequential file. SEND/EDIT allows the sender to create and, if necessary, modify a mail message before it is sent; this facility, unlike the earlier version of MAIL, does not requires a subprocess quota.

One drawback to the new utility is that the MAIL.MAI file occupies

a minimum of 30 blocks and is retained even when all the messages have been deleted. Another peculiarity is that if you receive a message which occupies more than three blocks of disk space, it is stored in a separate sequential file with a mysterious name such as MAIL$0004008E8D0B1D09.MAI. This file disappears when the message is deleted from within MAIL.

Further information is available by entering MAIL and typing HELP. Full documentation is in the manual "VAX/VMS Mail Utility Reference Manual", September 1984.

o Symbolic Debugger

The symbolic debugger has many new features, including windowing whereby source text and debug information can be displayed simultaneously in different parts of the screen; this can only be done at VT52 or VT100 terminals.

Further information can be obtained by typing HELP when running an image under control of the debugger. Full details are in the manual "VAX/VMS Symbolic Debugger Reference Manual".

o HELP

The opportunity has been taken to reorganise the HELP library. When you type HELP, you will get a list of all the topics in the HELP library supplied by DEC. All the locally-added information is kept in a separate library called ST_ANDREWS_HELP. To get a list of the topics that it contains, simply type @ST_ANDREWS_HELP (the abbreviation @ST_A will suffice) in response to the prompt "Topic?". Both the DEC and the local HELP topics will automatically be searched.

When using HELP within, for example, MAIL, DATATRIEVE and the symbolic debugger, the DEC topics are replaced by detailed information on the facility being used; the St Andrews library continues to be available.

o DSR

This utility, which is invoked by the DCL command RUNOFF or the locally-written command DSR, has been revised. Details of the changes can be found by typing HELP V4 UTILITIES DSR. Full documentation is in the manual "VAX DIGITAL Standard Runoff (DSR) Reference Manual".

One vital change is that the .PAGE SIZE and .RIGHT MARGIN commands no longer interact and the default page-width and right-margin are now 70 rather than 60 as previously. Users are recommended to explicitly set the page size and margins at the start of each .RNO file. The position of page numbers is now determined by the page width and is not affected by changes to the right margin. The previous defaults for page size and margins can be specified by

```
.ps 58,60
.lm0;.rm60
```

The way in which tables of contents and indexes are produced has been changed. Type HELP RUNOFF /CONTENTS and HELP RUNOFF /INDEX for details. If you wish to print a document on the SAVB lineprinter, you must use the RUNOFF command with the qualifier /REVERSE_EMPHASIS to ensure underlining is done correctly.

o DATATRIEVE

VAX-11 DATATRIEVE is completely new, replacing the earlier inefficient and out-of-date compatibility mode version. Users of DATATRIEVE will need to do some conversion before they can continue to run their existing DATATRIEVE jobs.

The new version uses the Common Data Dictionary (CDD) to store all the definitions of records, domains and so on. In the old version, all user definitions were stored in a single dictionary (unless the user himself created his own dictionary). Within the CDD dictionary, individual users can set up their own dictionary directories to contain their DATATRIEVE definitions. This is done as follows.

First of all, invoke DATATRIEVE by the command DTR32 (this can be abbreviated to DTR if you wish). Then create a dictionary directory belonging to you with the command

```
DEFINE DICTIONARY CDD$TOP.DTR$USERS.username
```

where "username" is YOUR username. Now type the command EXIT to leave DATATRIEVE and modify your LOGIN.COM file to include the command

```
$ ASSIGN CDD$TOP.DTR$USERS.username CDD$DEFAULT
```

If you wish to use DATATRIEVE in the same terminal session, you must also issue the above ASSIGN command (or re-execute your LOGIN.COM file by the command @LOGIN). When you next invoke DATATRIEVE and issue the command SHOW ALL you will find that your default dictionary directory is CDD$TOP.DTR$USERS.username. This dictionary directory will be initially empty. You can now proceed to place in it the definitions that you were previously using.

Unfortunately, it is not possible to copy definitions used by the old version of DATATRIEVE to the CDD. It is expected that most users will have their definitions stored in VAX/VMS command files, which can be executed from within DATATRIEVE to set up the definitions in the CDD. Note that the default file type of DATATRIEVE command files is now COM (previously it was CMD). Thus if you have a file MYREC.CMD containing a previous record definition, then you must type @MYREC.CMD. If you do not have a copy of your definitions in VAX/VMS files, contact the Advisory Service who can make arrangements to extract your definitions from the old dictionary.

The Computing Laboratory maintains the CDD and retains the right to delete any dictionary directories which have not been set up as outlined above. A major advantage of the CDD dictionary is that the definitions of one user cannot conflict with those of another.

New manuals will shortly be available at the main terminal sites. In the meantime, the HELP information within DATATRIEVE provides some assistance. Any user who is not sure about how to go about converting to the new system is URGED to contact the Advisory Service who will give individual assistance in the changeover.

o Echoing of control characters

The effect of control characters remains as before, but in some cases they are displayed differently.

CONTROL/C and CONTROL/Y	*INTERRUPT* or *CANCEL*
CONTROL/O	*OUTPUT OFF* and *OUTPUT ON*
CONTROL/Z	*EXIT*

o Search lists

This useful facility will be of interest to experienced users who have created subdirectories or have been allocated space on the USER2 disk. A full description of search lists can be found on pages 69-72 of the VAX/VMS DCL Dictionary manual.

A search list is a logical name which has been defined to have two or more equivalence strings. The following examples are just two possible uses for search lists; other applications will no doubt occur to users.

Suppose user DPSID has prepared a research paper in the file PAPER.RNO in his his current default directory USER1:[DPSID]. He wishes to use the RUNOFF command to create the formatted document PAPER.MEM in [DPSID] on USER2. First, he defines a search list SLIST by the command

```
$ DEFINE SLIST USER2:,USER1:
```

Then he changes his default directory to SLIST:[DPSID] by the command

```
$ SET DEFAULT SLIST
```

If he now types the command

```
$ RUNOFF REPORT
```

the document will be created as required as will now be explained. When RUNOFF is invoked, it looks for a file REPORT.RNO in the current default directory. Since the device portion is SLIST, RUNOFF looks for the file in USER2:[DPSID] since USER2: is the first equivalence string. Failing to find the file, RUNOFF then uses the second equivalence string and locates the file in USER1:[DPSID]. Since the document file is a new file to be created, the first equivalence string is acceptable and the file PAPER.MEM is created in USER2:[DPSID].

The user is thereby relieved of the task of specifying USER1: and USER2: in file specifications or continually changing his default directory. Note that the order of the equivalence names is of vital importance in this example.

As a second example, consider the effect of the commands

```
$ ASSIGN [DPSID.DATA],[DPSID.PROGS] DLIST
$ DIRECTORY DLIST
```

Assume that the current default directory is USER1:[DPSID]. Whenever a search list is used with a DCL command which can accept wildcard file specifications, then the command is carried out for each of the equivalence names, not the first acceptable one as in

the first example. Thus the above command will output directory listings of the contents of [DPSID.DATA] and [DPSID.PROGS]. If a directory is empty, no output is produced for that directory. Only if all the directories are empty is a warning message produced to say that no files have been found. Note that in the second example, the ASSIGN command has been used instead of DEFINE; both have the same effect.

o User passwords and security

A number of new security features have been introduced. In future, users will be required to change their passwords reasonably frequently. When a password is changed, the new password has a maximum life of 60 days. If the user logs in within five days of the expiry date of his password, he will be warned that his password is due to expire and asked to change it. If the user ignores the warning, or perhaps never receives it because he was away, the password will expire. When he next logs in, he will be asked to change his password immediately. If he logs out without changing the password, he will not subsequently be able to log in. It will then be necessary to request the Computing Laboratory to change his password; this will require a personal visit to Mr Cunningham - applications to change passwords will not be accepted over the telephone for security reasons.

Passwords are changed using the SET PASSWORD command. All new passwords must be at least 6 characters long. If you wish you can specify SET PASSWORD/GENERATE when VAX/VMS will offer you a selection of five possible passwords which it generates at random. DEC have taken precautions to filter out offensive choices and have apologised in advance in case any slip through the net! Be warned that these random passwords are easily forgettable!

A last security measure is the information displayed at login time, telling users when their previous interactive login was; their previous non-interactive login (if any); and the number of failed attempts at login in the intervening period. If, from this information, you suspect that someone may have logged in to your account, you should change your password immediately.

o Use of DECNET and proxy logins

The two processors SAVA and SAVB are connected by a DECNET communications link, which can be used for various purposes.

First, it is possible to log in to one processor and login to a second processor across DECNET using the command SET HOST. Use of DECNET in this way has been discouraged since it means that the user is logged in on both processors, taking up a valuable process on the processor from which the SET HOST command was issued. All terminals (apart from the sixteen terminals in the User Area which are directly connected to SAVB) can access both processors, either via the PACX or the Cambridge Ring, so there is no need to use DECNET in this way. As a result, the command NETMOVE which simplified the use of SET HOST has been withdrawn.

Second, the DECNET link can be used to transfer files from one processor to the other. For example, a user on SAVA may wish to transfer a file to SAVB for plotting on the Benson electrostatic plotter; conversely, a user on SAVB may wish to transfer files to SAVA to be written onto magnetic tape. Provided that the user is transferring files between accounts on the two processors that have

identical usernames, all that is necessary is to specify the node names on the file specifications. For example, to copy the file PLOT.DAT while logged in as DPSID on SAVA to the same username on SAVB, all that is necessary is to type the command

```
$ COPY PLOT.DAT SAVB::
```

The copy is achieved using a "proxy login". VAX/VMS first of all looks to see whether the username DPSID exists on SAVB. If it does, it then checks to see whether the username DPSID is allowed to carry out a proxy login on the SAVB account. Since the Laboratory policy is to ensure that the same username on SAVA and SAVB always belongs to the same user, proxy logins have been enabled on all accounts for the identical user name on the remote node.

This in fact increases security, since it is no longer necessary to specify an "access control string" containing a username and password when copying across DECNET. The command NETPASS, which set up a logical name containing this access control string has therefore been withdrawn.

If a user wishes to copy a file across DECNET between different usernames, then he must specify an access control string. Assuming that one of the usernames belonged to a colleague, then either the colleague would need to give the user his password or vice versa. It is not recommended that users do this. Instead, the owner of the original file should set up GROUP or WORLD read permission, as necessary, on the file. The user making the copy can then use a proxy login on his own account and specify the directory name in addition to the file name of the file to be copied.

For example, suppose DPSID on SAVA wishes to copy the file IMPORTANT.DAT from user DPSJH on SAVB. Owner DPSJH first changes the protection on his file by

```
$ SET PROTECTION=W:R IMPORTANT.DAT
```

User DPSID then logs in to SAVA and copies the file by

```
$ COPY SAVB::[DPSJH]IMPORTANT.DAT MYCOPY.DAT
```

Alternatively, he could log in to SAVB and type

```
$ COPY [DPSJH]IMPORTANT.DAT  SAVA::MYCOPY.DAT
```

After the file has been copied, the owner DPSJH can reset the permissions on his file to their previous value.

A third use of DECNET is for sending MAIL messages. This is similar to file transfers, and is also done using proxy logins.

Users will note that it is now necessary to have a username on both SAVA and SAVB if you wish to use DECNET to copy files or send mail messages. All users of SAVB have a matching entry on SAVA in the authorisation file; the reverse does not apply. Any user of SAVA wishing to use DECNET should apply to Mr Cunningham for a matching account on SAVB. The account will be set up with a nominal amount of disk space and it will not normally be possible to use it other than for proxy logins. The Laboratory intends, eventually, to make the user authorisation files on SAVA and SAVB identical to remove this anomaly.